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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,776	06/30/2003	Kei Yamamoto	204552028900	8129

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EXAMINER
FLORES RUIZ, DELMA R

ART UNIT	PAPER NUMBER
2828	

MAIL DATE	DELIVERY MODE
02/06/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/608,776	YAMAMOTO ET AL.	
	Examiner	Art Unit	
	DELMA R. FLORES RUIZ	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 November 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9-22* is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

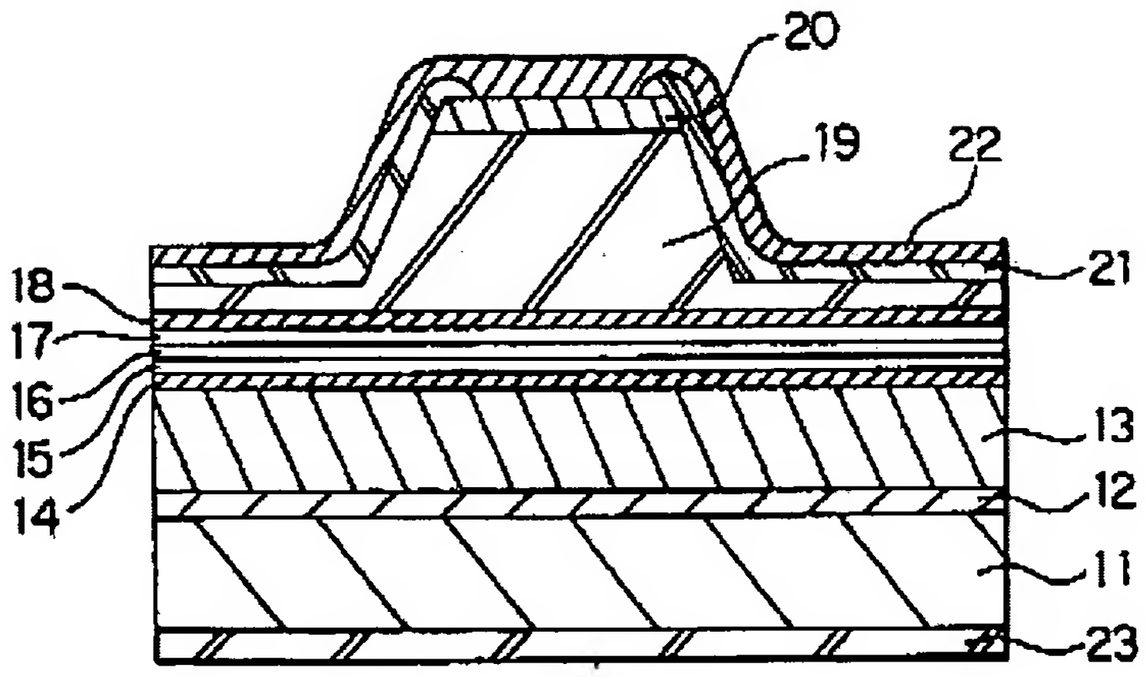
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 – 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkubo (5,832,018) in view of Serreze (5,222,090).

Regarding claims 1, 2, 5, 8, Ohkubo discloses semiconductor laser comprising; a lower clad layer (see Fig. 1, Character 13) a lower guide layer (reference call "confinement", see Fig. 1, Character 14), an active region (see 1, Characters 15 – 17) and upper guide layer (see Fi1, Character 18) and an upper clad layer (see Fig. 1, Character 19) are supported by GaAs substrate (see Fig. 1 Character 11), the active region having a quantum well (see Fig. 1, Characters 16) structure in which one or more well layers and barrier layers (see Fig. 1, Characters 15 and 17) are stacked, wherein said barrier layer are formed of one of InGaAsP and GaAsP (Abstract) and said upper and/or lower guide layer is formed of $Al_zGa_{1-z}As$ ($0.20<z<1$) (see Figure 1,

Character 14 and 18, Column 1, Lines 24 – 27 and 45 – 49).

Ohkubo discloses the claimed invention except for one or more well layers are formed on InGaAsP and semiconductor laser device having an oscillation wavelength of larger than 760nm and smaller than 800nm. Serreze teaches providing his device with one or more well layers are formed InGaAsP and semiconductor laser device having an oscillation wavelength of larger than 760nm and smaller than 800nm. However, it is well known in the art for one or more well layers are formed of any one of InGaP, InGaAsP or GaAsP and the high power semiconductor laser device to have an oscillation wavelength larger than 760nm and smaller than 800nm as discloses by Serreze in Column 4, Lines 47 – 50 and Column 1, Lines 6 – 10 and 63 – 68. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine semiconductor laser device of Serreze with the semiconductor laser device of Fukunaga because InGaP and InGaAs Ps has a lower thermal conductivity and produce outputs having waveguide varying from 670nm and the wavelength produce by pure GaInP to 860nm and be used for many applications including the pumping of solid state laser who absorption spectra are within this wavelength range and it would provide a high power semiconductor laser device with low threshold current, (see Column 3, Lines 28 – 36 and Column 4, Lines 47 – 50), since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.



Regarding claims 3, and 4, Ohkubo discloses a upper and lower cladding (see Fig. 1, Characters 13 and 19) contain Al, and a value of z, wherein a value of z represent a mole fraction of Al in the group-III elements of said upper and/or lower guide layer, is smaller than a value of an Al mole fraction of said upper and lower clad layer and the value of z varies stepwise or continuously and is such a fashion as to increase with increasing nearness to said upper and lower clad layers (abstract, Column 3, Lines 30 – 52).

Regarding claims 6, 7, Ohkubo discloses a one or more well layers and barrier layer have a compressive stain (see Fig. 1, Characters 16, Column 4, Lines 1 – 11).

Allowable Subject Matter

Claims 9 – 22 are allowed.

The following is an examiner's statement of reasons for allowance: Claim 9 recites a semiconductor laser structure including the specific structure limitation of barrier layer are formed of an $In_{1-x}Ga_x As_{1-y}P_y$ having a band gap energy larger than that of said well layers, and there hold relationship that 0 <x <1; 0.02 < y < 0.75 and |(a2 – a1) / a1| * 100 0.65, where a1 is lattice constant of said one or more well layers, and a2 is lattice constant of said barrier layers, which is neither anticipated or disclosed nor suggested in any piece of available prior art, which is neither anticipated nor obvious over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

Applicant argues the prior art lacks: On page 6, last paragraph the applicant said; "The semiconductor laser device with an emission wavelength of between 760 and 800 nm according to the present invention is characterized in the claimed combination of the compositions of the InGaAsP well layer(s), InGaAsP or GaAsP barrier layers, and $Al_zGa_{1-z}As$ (0.20<z<1) upper/lower guide layer. Such a combination of the compositions

for the well layer(s), barrier layers, and the guide layer(s) is not taught or suggested by Ohkubo even in combination with Serreze in which the confinement layers made of $(Al_{0.2}\ Ga_{0.8})_{0.5}\ In_{0.5}P$ or $Ga_{0.5}\ In_{0.5}P$ serve as barrier and guide layer". The examiner disagree with the applicant arguments since the prior art does teach the semiconductor laser device with an emission wavelength of between 760 and 800 nm according to the present invention is characterized in the claimed combination of the compositions of the InGaAsP well layer(s), InGaAsP or GaAsP barrier layers, and $Al_zGa_{1-z}As$ ($0.20<z<1$) upper/lower guide layer. Ohkubo discloses the claimed invention except for one or more well layers are formed on InGaAsP and semiconductor laser device having an oscillation wavelength of larger than 760nm and smaller than 800nm. However, it is well known in the art for one or more well layers are formed of InGaAsP and the high power semiconductor laser device to have an oscillation wavelength larger than 760nm and smaller than 800nm as discloses by Serreze in Column 4, Lines 47 – 50 and Column 1, Lines 6 – 10 and 63 – 68. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine semiconductor laser device of Serreze with the semiconductor laser device of Ohkubo because InGaAsPs has a lower thermal conductivity and produce outputs having waveguide varying from 670nm and the wavelength produce by pure GaInP to 860nm and be used for many applications including the pumping of solid state laser who absorption spectra are within this wavelength range and it would provide a high power semiconductor laser device with low threshold current, (see Column 3, Lines 28 – 36 and Column 4, Lines 47

– 50), since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416. Therefore, it would be desirable for a semiconductor laser diode to be constructed to operate with outputs of 700-750 nm while requiring a low threshold current density and having a high characteristic temperature, high internal efficiency, high reliability and a large output power. In addition it would be desirable if such diodes, suitably modified, might also operate suitably in the 750-850 nm bands as stated in the rejection above.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delma R. Flores Ruiz whose telephone number is (571) 272-1940. The examiner can normally be reached on M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Sun Harvey can be reached on (571) -272-1835. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Delma R. Flores Ruiz
Examiner
Art Unit 2828
DRFR/MH
January 28, 2008

Min Sun Harvey
Supervisor Patent Examiner
Art Unit 2828